Name: _____

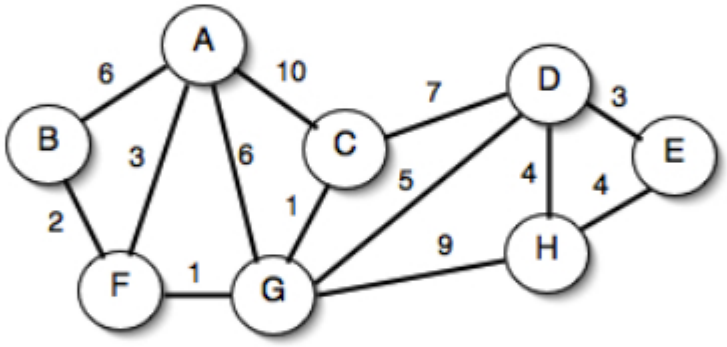
ID: _____

CSCI 3104, Algorithms **Profs. Chen & Grochow**

Quiz 7 Q2 S13 **Spring 2020, CU-Boulder**

Instructions: This quiz is open book and open note. You **may** post clarification questions to Piazza, with the understanding that you may not receive an answer in time and posting does count towards your time limit (30 min for 1x, 37.5 min for 1.5x, 45 min for 2x). Questions posted to Piazza **must be posted as PRIVATE QUESTIONS.** Other use of the internet, including searching for answers or posting to sites like Chegg, is strictly prohibited. Violations of these grounds to receive a 0 on this quiz. Proofs should be written in **complete sentences. Show and justify all work to receive full credit.**

Standard 13. Consider the following graph G.



We seek to construct a minimum spanning from G, using Prim's Algorithm with the B as the source vertex. At the first stage of Prim's Algorithm, we push (B, F) and (B, A) into our priority queue. The (B, F) edge is then our first edge selected for the MST.

Determine the next five edges selected to be included in the MST. Clearly articulate the steps Prim's Algorithm takes to select these edges.

Solutions: We select the smallest edge that is incident to the visited vertices and does not create a cycle. In this manner, we select (in order):

- (F, G)
- (G, C)
- (F, A)
- (G, D)
- (D, E)